

CLAIMS

What is claimed is:

- Sub a 5 9 1. A housing assembly for an implantable medical device (IMD), comprising:  
a housing comprising a first shell and a second shell, the first and second  
shells comprising an inner surface and an outer surface, respectively, the outer  
surfaces of the first and second shells comprising a material compatible with body  
fluids;
- 10 a battery enclosure comprising a cover and all or a portion of the first shell of the IMD  
housing, the cover of the battery enclosure disposed between the inner surfaces of the  
first and second shells;
- 15 an electrochemical cell provided in the battery enclosure;  
electronic circuitry provided between the inner surface of the second shell and  
the cover of the battery enclosure; and
- 20 a hermetic seal provided between the cover of the battery enclosure and all or the  
portion of the first shell.
- 25 2. The housing assembly of claim 1, wherein the hermetic seal comprises a weld  
joint between the cover and all or the portion of the first shell.
3. The housing assembly of claim 1, wherein the hermetic seal comprises a butt  
weld joint between the cover and all or the portion of the first shell.
- 25 4. The housing assembly of claim 1, wherein the hermetic seal comprises a  
tumble weld joint between the cover and all or the portion of the first shell.
5. The housing assembly of claim 1, wherein the hermetic seal comprises a  
spanked weld joint between the cover and all or the portion of the first shell.

6. The housing assembly of claim 1, wherein the cover comprises a coined edge and the hermetic seal comprises a weld joint between the coined edge of the cover and a peripheral edge along all or the portion of the first shell.

5 7. A housing assembly for an implantable medical device (IMD), comprising:

a housing comprising a first shell and a second shell, the first and second shells comprising an inner surface and an outer surface, respectively, the outer surfaces of the first and second shells comprising a material compatible with body fluids, the first shell comprising a substantially straight peripheral wall portion; a battery enclosure comprising a cover and at least a portion of the first shell of the IMD housing, the cover of the battery enclosure disposed between the inner surfaces of the first and second shells and comprising a peripheral edge; an electrochemical cell provided in the battery enclosure;

10 electronic circuitry provided between the inner surface of the second shell and the cover of the battery enclosure; and  
15 a hermetic seal comprising a weld joint between the peripheral edge of the cover and the substantially straight peripheral wall portion of the first shell.

20 8. The housing assembly of claim 7, wherein the substantially straight peripheral wall portion of the first shell comprises a ledge which the peripheral edge of the cover engages.

25 9. The housing assembly of claim 7, wherein the hermetic seal comprises a spanked edge defined between the peripheral edge of the cover and the substantially straight peripheral wall portion of the first shell.

10. The housing assembly of claim 7, wherein the hermetic seal comprises a weld joint between the peripheral edge of the cover and the substantially straight peripheral wall portion of the first shell.

30 11. The housing assembly of claim 7, wherein:

the cover comprises a substantially straight peripheral wall portion; and  
the hermetic seal comprises a weld joint between the substantially straight  
peripheral wall portion of the cover and the substantially straight peripheral wall  
portion of the first shell.

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12. The housing assembly of claim 11, wherein the weld joint comprises a  
standing edge weld joint.

13. The housing assembly of claim 11, wherein the cover is a formed cover.

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14. A housing assembly for an implantable medical device (IMD), comprising:  
a housing comprising a first shell and a second shell, the first and second  
shells comprising an inner surface and an outer surface, respectively, the outer  
surfaces of the first and second shells comprising a material compatible with body  
fluids, the first shell comprising a substantially straight peripheral wall portion;  
a battery enclosure comprising a cover and at least a portion of the first shell of the  
IMD housing, the cover of the battery enclosure disposed between the inner surfaces  
of the first and second shells and comprising a coined edge;  
an electrochemical cell provided in the battery enclosure;

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20 electronic circuitry provided between the inner surface of the second shell and  
the cover of the battery enclosure; and  
a hermetic seal comprising a weld joint between the coined edge of the cover and the  
substantially straight peripheral wall portion of the first shell.

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15. The housing assembly of claim 14, wherein the weld joint comprises a butt  
weld joint.

16. The housing assembly of claim 14, wherein the weld joint comprises a tumble  
weld joint.

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Sub a11  
a11  
17. A housing assembly for an implantable medical device (IMD), comprising:

a housing comprising a first shell and a second shell, the first and second shells comprising an inner surface and an outer surface, respectively, the outer surfaces of the first and second shells comprising a material compatible with body fluids, the first shell comprising a first substantially straight peripheral wall portion and a second substantially straight peripheral wall portion adjacent the first substantially straight peripheral wall portion, the second substantially straight peripheral wall portion being offset relative to the first substantially straight peripheral wall portion;

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a battery enclosure comprising a cover and at least a portion of the first shell of the IMD housing, the cover of the battery enclosure disposed between the inner surfaces of the first and second shells and comprising a peripheral edge; 10  
an electrochemical cell provided in the battery enclosure;

electronic circuitry provided between the inner surface of the second shell and the cover of the battery enclosure; and

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a hermetic seal comprising a weld joint between the peripheral edge of the cover and either the first or the second substantially straight peripheral wall portions.

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18. The housing assembly of claim 17, wherein the weld joint comprises a spanked weld joint.

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19. The housing assembly of claim 17, wherein the cover is a stamped cover.

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20. The housing assembly of claim 17, wherein the first substantially straight peripheral wall portion of the first shell comprises a ledge which the peripheral edge of the cover engages.

21. The housing assembly of claim 17, wherein the weld joint comprises a spanked weld joint.

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22. The housing assembly of claim 17, wherein:

the first substantially straight peripheral wall portion of the first shell comprises a ledge which the peripheral edge of the cover engages; and  
the hermetic seal comprises the weld joint between the peripheral edge of the cover and the second substantially straight peripheral wall portion.

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23. The housing assembly of claim 22, wherein the hermetic seal further comprises a spanked edge defined between the peripheral edge of the cover and the second substantially straight peripheral wall portion.

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24. The housing assembly of claim 22, wherein the cover is a stamped cover.

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25. A housing assembly for an implantable medical device (IMD), comprising:  
*A15* a housing comprising a first shell and a second shell, the first and second shells comprising an inner surface and an outer surface, respectively, the outer surfaces of the first and second shells comprising a material compatible with body fluids, the first shell comprising a first substantially straight peripheral wall portion and a second substantially straight peripheral wall portion adjacent the first substantially straight peripheral wall portion, the second substantially straight peripheral wall portion being offset relative to the first substantially straight peripheral wall portion;

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a battery enclosure comprising a cover and at least a portion of the first shell of the IMD housing, the cover of the battery enclosure disposed between the inner surfaces of the first and second shells and comprising a substantially straight peripheral wall portion;

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an electrochemical cell provided in the battery enclosure;

electronic circuitry provided between the inner surface of the second shell and the cover of the battery enclosure; and

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a hermetic seal comprising a weld joint between the substantially straight peripheral wall portion of the cover and either the first or the second substantially straight peripheral wall portions of the first shell.

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~~2P~~ 21. The housing assembly of claim 25, wherein the weld joint comprises a standing edge weld joint.

~~27~~ 28. The housing assembly of claim 25, wherein the cover is a formed cover.

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